

## Assignment -4

### Python Programming

Assignment Date	26 October 2022
Student Name	Tamilselvan T
Student Roll Number	917719IT111
Maximum Marks	2 Marks

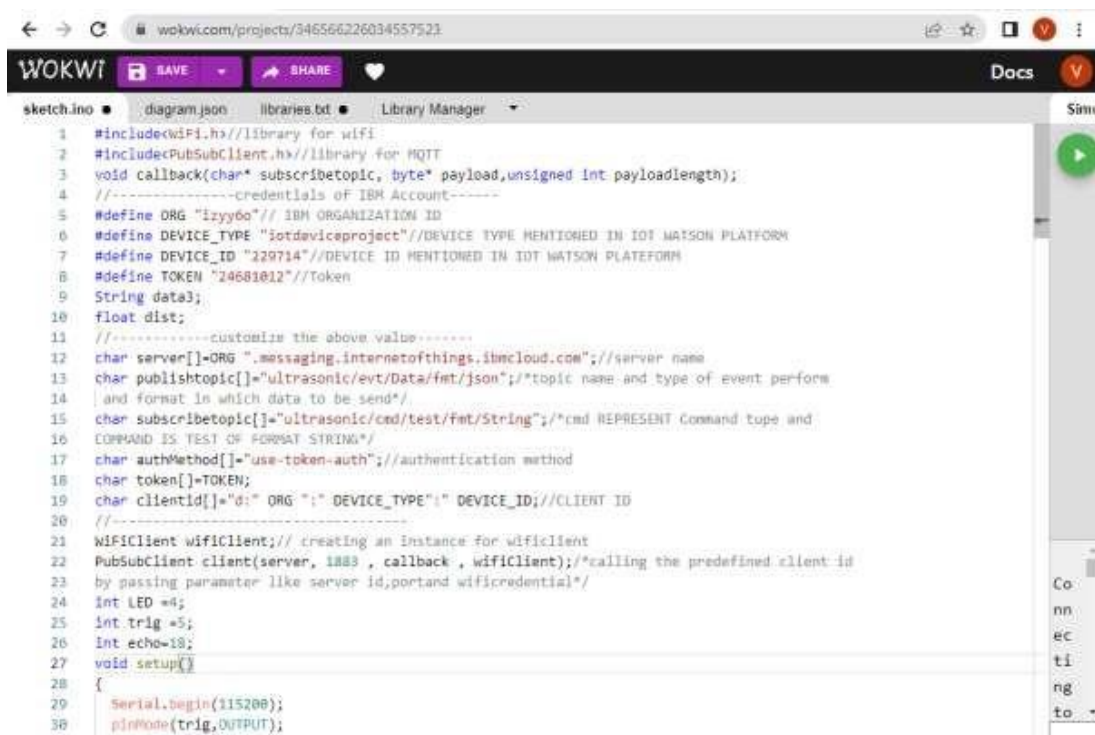
#### Question-1:

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

Upload document with wokwi share link and images of ibm cloud.

#### Solution:



```
1 #include<WiFi.h> //library for wifi
2 #include<PubSubClient.h> //library for MQTT
3 void callback(char* subscribetopic, byte* payload, unsigned int payloadlength);
4 //-----credentials of IBM Account-----
5 #define ORG "izyy6o" // IBM ORGANIZATION ID
6 #define DEVICE_TYPE "iotdeviceproject" //DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
7 #define DEVICE_ID "229714" //DEVICE ID MENTIONED IN IOT WATSON PLATFORM
8 #define TOKEN "24681012" //Token
9 String data3;
10 float dist;
11 //-----customize the above value-----
12 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; //server name
13 char publishstopic[] = "ultrasonic/evt/Data/fmt/json"; //topic name and type of event perform
14 //and format in which data to be send*/
15 char subscribetopic[] = "ultrasonic/cmd/test/fmt/String"; //cmd REPRESENT Command type and
16 //COMMAND IS TEST OF FORMAT STRING*/
17 char authMethod[] = "use-token-auth"; //authentication method
18 char token[] = TOKEN;
19 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //CLIENT ID
20 //-----
21 WiFiClient wificlient; // creating an instance for wificlient
22 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined client id
23 //by passing parameter like server id, port and wificlient*/
24 int LED = 4;
25 int trig = 5;
26 int echo = 18;
27 void setup()
28 {
29   Serial.begin(115200);
30   pinMode(trig, OUTPUT);
```

← → C wokwi.com/projects/346566226034557523

WOKWI SAVE SHARE Docs

sketch.ino diagram.json libraries.txt Library Manager

```
92 }
93   initManagedDevice();
94   Serial.println();
95 }
96 }
97 void wificonnect()//function defenition for wificonnect
98 {
99   Serial.println();
100   Serial.print("Connecting to ");
101   WiFi.begin("Wokwi.GUEST", "",6);//PASSING THE WIFI CREDENTIALS TO ESTABLISH CONNECTION
102   while (WiFi.status() !=WL_CONNECTED){
103     delay(500);
104     Serial.print(".");
105   }
106   Serial.println("");
107   Serial.println("WiFi connected");
108   Serial.println("IP address");
109   Serial.println(WiFi.localIP());
110 }
111 void initManagedDevice(){
112   if(client.subscribe(subscribetopic)){
113     Serial.println((subscribetopic));
114     Serial.println("subscribe to cmd OK");
115   }else{
116     Serial.println("subscribe to cmd failed");
117   }
118 }
119 void callback(char* subscribetopic,byte*payload,unsigned int payloadLength)
120 {
121   Serial.print("callback invoked for topic: ");
122   Serial.println(subscribetopic);
```

Simu

Co  
nn  
ec  
ti  
ng  
to

← → C wokwi.com/projects/346566226034557523

WOKWI SAVE SHARE Docs

sketch.ino diagram.json libraries.txt Library Manager

```
123 for(int i=0; i< payloadLength; i++){
124   //Serial.print((char)payload[i]);
125   data3 +=(char)payload[i];
126 }
127 //Serial.println("dta: "+ data3);
128 //if(data3=="Near")
129 //{
130 //Serial.println(data3);
131 //digitalWrite(LED,HIGH);
132 //}
133 //else
134 //{
135 //Serial.println(data3);
136 //digitalWrite(LED,LOW);
137 //}
138 data3="";
139 }
```

OUTPUT:

DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

Browser	Action	Device Types	Interfaces	Add Device
DistanceDetect	Disconnected	ULTRASON	Device	Oct 20, 2022 9:46 AM
Identity	Device Information	Recent Events	State	Logs
This would normally display a few seconds worth of data being received and being processed by the system.				
Event	Value	Format	Last Received	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Items per page: 50   1 of 2 items				

When no object is detected

Browser	Action	Device Types	Interfaces	Add Device
DistanceDetect	Disconnected	ULTRASON	Device	Oct 20, 2022 9:46 AM
Identity	Device Information	Recent Events	State	Logs
This would normally display a few seconds worth of data being received and being processed by the system.				
Event	Value	Format	Last Received	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Data	{\"Distance\":79.66,\"Object\":\"None\"}	json	a few seconds ago	
Items per page: 50   1 of 2 items				

When object is detected in ultrasonic detector

wokwi.com/projects/346572482591851092

WOKWI SAVE SHARE

Docs

sketch Simulation

diagram library

Libra Mana

1 object is near  
1 Sending payload: {"distance":97.82,"object":"Near"}  
1 Publish ok  
1 Distance in cm 97.82  
2 object is near  
2 Sending payload: {"distance":97.82,"object":"Near"}  
2 Publish ok

